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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No. 205 (9) Press
~~B.P. No.~~ ~~Mis.~~

Dated 26-1- 1876.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
26th January **1876.**

Read following papers :—

No. 445. Endorsement of the Chief Engineer for Irrigation, dated 20th October 1875, No. 1,229.

From the District Engineers of Nellore and North Arcot, to Lieutenant-Colonel J. MULLINS, R.E., Chief Engineer for Irrigation, dated Camp at Madras, 6th October 1875, extra No. 5.

IN accordance with the instructions conveyed in G.O., No. 2,281, dated 6th August 1875, we arranged for meeting and discussing at Madras the proposals recently made in connection with the proposed diversion of the Perryaur, and we have now the honor to submit the annexed report on the several suggestions embodied in G.O., No. 1,193, dated 30th April 1875.

2. The construction of an intercepting channel was not overlooked by the officers entrusted with the preparation of the scheme; in fact, it was considered by the writers of this report and abandoned as totally unsuited to the configuration of the Perryaur Valley, and we have no hesitation in stating that such an arrangement capable of irrigating even half the area commanded by the proposed Perryaur Reservoir would be more costly to execute and far more difficult to maintain than the scheme submitted for approval on the 15th April 1872.

3. By referring to the contour survey of the Perryaur Valley, it will be seen that an intercepting channel must wind very considerably, or have several high and expensive dams; that a deal of water would be lost if aqueducts were substituted for dams in the line of the channel; and that the slopes of the hills along which the channel must be carried vary from nearly vertical to about one in five, the average being, it is believed, one in three. Rock is found at or close to the surface of the ground throughout the greater part of the line of the channel, and where the latter runs through soil the excavation would be heavy and costly, and a considerable expenditure would also be necessary on subsidiary works to prevent incessant injury from cross drainage.

4. If water is to be diverted from the Perryaur by an intercepting channel only, the water-registers of that river indicate that a section capable of discharging 2,200 cubic feet per second* would be required to draw off sufficient water for the irrigation of 44,220 acres† in the plains of Madura.

The cost of a channel of this water-section *per mile* would be as annexed :—

	RS.
In rock ‡	1,49,600
Partly in rock with a masonry wall on the lower side	1,54,880
In soil, inclusive of cost of protecting side slopes with stone pitching and shingle backing ...	1,33,760

The above calculations refer to a channel with an average fall of 2 feet per mile.

* This capacity is necessary to secure an average supply of 650 cubic feet per second during the cultivating season.

† The scheme submitted on the 15th April 1872 provides for the irrigation of 78,000 acres.

‡ At the low rate of 1 Rupee per cubic yard.

5. Taking all circumstances into consideration, we are of opinion that the best outfall for an intercepting channel would be by a moderate cutting through the

saddle selected by the late Major Ryves as the most desirable line for a cut to connect the valleys of the Perryaur and Sooralayaur. The crest of this saddle is 169 feet above Perryaur datum; and assuming 149 feet as the level of the bed of the channel there, it would have to traverse about 28 miles of sidelong ground before striking the Perryaur, and would probably cost Rupees 42,60,000.*

* Exclusive of the cost (Rupees 55,000) of the water-shed cutting.

6. The right bank of the Perryaur is too difficult to deal with to admit of any efficient contour channel being carried along it that would prove a success financially; but we consider it desirable to state that, irrespective of the cost of disposing of the cross drainage, and of the advisability of securing as much water for irrigation as possible, a channel, with a water-section capable of discharging 300 cubic feet per second, would be the most economical arrangement.

7. With reference to the storage of water to keep up the supply for irrigation between freshes in the Perryaur, we are convinced that any attempt to do so on a large scale in the valleys of the Sooralayaur and Vigay would be a mistake, and we are equally certain that it would not pay to utilize the shallow tanks of Madurá as reservoirs for Perryaur water.

8. The idea of using iron either for the under-escape in conjunction with an earthen dam or for the whole dam, was considered by Captain Pennycuick before submitting his first report in 1870, but the cost of either plan is such as to render its adoption unadvisable. Iron piping of the length necessary to clear the ends of the dam would cost at least Rupees 4,000 per square foot of waterway, exclusive of the cost of the masonry bedding, or more than seven times the cost† of the tunnel including the open cuttings at the two ends. It may be mentioned here that Captain Pennycuick consulted Messrs. Jennings and Co. as to the possibility of using earthenware pipes for the temporary escape, but found the cost too great, besides which the makers informed him that these pipes could not be relied on for heads exceeding 30 feet.

† Rupees 5,63,000 for 1,064 square feet.

9. We are of opinion that it would be highly undesirable to combine the temporary and the permanent escapes; the former must of course be under the dam, an arrangement which we would not venture to recommend for passing the surplus permanently, and we consider that it would be a dangerous experiment to depend on discharging the floods of a large river like the Perryaur by self-acting or other gear under a head varying from 120 to 150 feet.

10. Adverting to the time occupied in surveying the valley of the Perryaur above the upper sites, we beg respectfully to observe that all the information then obtained was necessary for guidance in the preparation of the design for No. 4 site, and it has just proved most useful in connection with the recent reference made to us regarding an intercepting channel.

11. The only unnecessary work executed in connection with the investigation of the upper sites was the road, but even this was useful in familiarizing the people with the hill tracts, and in removing to a great extent the dread that prevailed of working there.

12. Below No. 4 site the fall in the bed of the Perryaur is, as described by Colonel Oakes, * very rapid for some miles, and we consider it would be a waste of labor to search for a more favorable position for the dam in that locality ; and we must add that we think the gorge Colonel Fischer refers to in his letter,† No. 4,746, dated 16th February 1875, is a ravine in the valley of the Sooralayaur, and not, as he appears to suppose, a depression in the Perryaur water-shed.

* In paragraph 6 of report, dated 20th June 1873.

† Embodied in G.O., No. 746, of 18th March 1875.

13. The advisability of constructing a masonry, instead of a silt, dam is an open question, and we purpose reporting separately on the subject.

14. We are therefore of opinion that no further investigation is necessary ; it may be taken as quite certain that the diversion of the water by means of a hill side channel would not be remunerative, and that labor devoted to the preparation of a detailed estimate for such a work would be thrown away. For any other scheme the information already collected is sufficient to enable a decision to be arrived at.

(Signed) R. SMITH,
District Engineer, Nellore.

(Signed) J. PENNYCUICK, Captain, R.E.,
District Engineer, North Arcot.

Submitted to Government, with reference to G.O., No. 2,281, of the 6th August last.

(Signed) JOHN MULLINS, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

No. 7.

MEMORANDUM.

The Chief Engineer considers the length and cost of channel estimated by Messrs. Smith and Pennycuick as purely conjectural, while concurring in their opinion that Major Ryves' saddle is likely to afford a better outfall than that at Goodaloor Tavalum. But he has no objection to accept their conclusion that no further investigation of a minor project is necessary, as they and Lieutenant-Colonel Mullins in his memorandum, No. 821, of 22nd July state that the subject has already been fully discussed among them on the spot, and decided against as unsuitable to the locality, which would make it too costly to be remunerative.

2. Nothing that they have said, however, induces the Chief Engineer to modify the remarks in paragraphs 7 to 10 of his memorandum recorded with G.O., No. 1,193, of 30th April 1875. He differs from the Chief Engineer for Irrigation in considering a general examination of the country to have been an indispensable preliminary ; one result of which would have been the expenditure on the Goodaloor Ghaut of money thrown away upon a useless track, without loss of the desirable ends alluded to in paragraph 11 of the report by Messrs. Smith and Pennycuick. The Engineer Establishment of the Public Works Department has for a long time past been

inadequate to cope with all the work it had to undertake ; and the Chief Engineer considered it his duty to point out how it had been unnecessarily weakened for executive purposes by the unduly prolonged detention of several useful officers on this project for want of systematic arrangements.

FORT ST. GEORGE, (Signed) G. W. WALKER, Major-General, R.E.,
5th January 1876. *Chief Engineer, Public Works Dept.*

No. 446. ORDER THEREON, 26th January 1876, No. 205.

IRRIGATION, No. 27.

ORDERED that the Home Government be addressed upon the subject of the Perryaur Project with reference to No. 1,194, dated 30th April 1875.

(Here enter No. dated 1876.)

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
Secretary to Government.

To the District Engineer, Madura.
,, Chief Engineer for Irrigation.
To Captain Pennycuick.

No. 1229

Enclosure 1.

Submitted to Government with reference to G.O. No. 2281 of the 6th August last.

Fort Saint George
20th October 1875

[signature]
Lt. Coll R.E.
Chief Engineer for Irrigation

To
The Secretary to Government
Public Works Department

G.O. 18th March 75 No 468-469
" 30th April " " 692-703.
" 6th August " " 119-120.

P. W. 1875 Dept.
No: 6792

From

The Chief Engr.
for Irrigation

Dated 20th Octr. } 1875.
Recd 22nd " } 1875.

E. 1. No: 1229.

Submitting letter of ~~the~~ Dt. Engrs. of Nellore & N. Arcot, reporting on the proposals recently made for the diversion of the Perryaur.

445

G.O. No 205. 26.1.76

Ci 5-1-76

No.

(7)

Memorandum.

The Secretary begs to submit that the delay in replying to the former Communication rests, in all probability, with the Government of India, who have most likely issued some proceedings upon the subject, and communicated them to the Home Government.

C. M. Walker Major Genl R.E.
Secretary to Govt.
P. W. D.

445

(9)

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

Read the following :—

Endorsement of the Chief Engineer for Irrigation } (H.S. No 1229 d/ 21 Octr 1875)

Memorandum of the Chief Engr. (" " 7 d/ 5 Jany/76)

Our reference to the Secy of State was made Eight months ago. I think we might respectfully ask his attention to the subject, so as to decide whether we should persevere with this great work or abandon it. RE. 8/1/76.

Ordered to be recorded.

G.N.W.

I wish to be informed on what date the reference made to the Secretary of State thro' the Govt of India of the Periyar project, ordered in

P.W.C. 3 GO 30th April 75 was made — & if any reply has been received

W.

Reference to Secy of State for Sanction was made in letter No 1194 of 30th April 1875 herewith submitted — G.N.W. 7.1.76

Supply the above & circulate the papers

B.

I agree to the reminder to the Sec. of State

W. 15/1

2 [illegible] 1911

proposes [illegible]

to the Sec of State [illegible]

calling [illegible]

opinions [illegible]

[illegible]

[illegible]

the [illegible]

[illegible]

12

No 205 P. W. Dept. (11)

Proceedings of the Madras Government,

under date 26 Jany 76.

Read the following:—

Endorsement of the Ch. Engr. for Irrign. (H.S. No 1229 d/ 20 October 1875)

Memorandum by the Ch. Engr. P.W.D. (— do — No 7 of 5 Jany 1876)

Ordered that the Home Government be addressed upon the Subject of the Periyaur Project with reference to No. 1194, dated 30th April, 1875.

(H.S. No d/)

My Lord Marquis

With our Secretary's letter, No. 1194,

1194 of the 30th April,
1875, we forwarded
to the Government
of India all papers
connected with the
Perryaur project of
Irrigation in Madura.
We requested that
they might be referred
through your Lordship
to the highest Engineering
authorities at home,
with a view to the
possible elaboration
of a Scheme free
from the risks at=
-tending upon the
measures devised by

our Madras Engineers.

We would now respectfully call your Lordship's attention to the subject, in order that ~~it~~ we may be ~~decided whether we are to proceed with, or to abandon this great work.~~

in a position to determine what further steps should be taken in connection with this ~~project~~ ~~great~~ work

G.M.W.

To
D. E. Madura ✓
Captain Pennycuick ✓
Ch. Eng. for Irrigation ✓ Desp. 7-2-76

6792

15

Govt. of {1876} Madras.

PUBLIC WORKS.

To D.E. Madura

Dated

Issued

Recd. Encl.

G, O., 26 Jany 1876, No. 205

Nos. 445-446

Perryaur Project, Madura

Ordered that the Home Govt be addressed on the subject of the ———.

11-2-1876

Inviting attention to P. Works letter to the Govt of India in respect to the Perryaur Project in Madura, with a view to determine the further steps to be taken in connection with the proposed work.